

Six Square Feet of Prime Waterfront Property: Barn Owls of the Patuxent River

By Andrew Brown,
*Senior Naturalist, Calvert County
Natural Resources Division*

As a young boy growing up in Forestville, Maryland, I often listened to stories told by my grandfather of the wildlife of the Chesapeake region. One memory I hold vividly is an account he portrayed while preparing the duck blind in Aquasco for the upcoming hunting season, was that of a Barn Owl living inside the blind and the terrible mess he had to clean up when the nesting season ended. Little did I know at the time, that years later I would be deeply ingrained in studying the ecology of the Patuxent River Barn Owls.

Barn Owls are unique in the owl world. They are frequently confused with Barred Owls. There are two families of owls found world-wide. The Tytonidae, comprising 16 species, including Barn Owls, Grass Owls, Sooty Owls, Masked Owls, and Bay Owls, phylogenetically broke away from the true owls approximately 45 million years ago. The Strigidae or “true owls,” have upwards of 200 species. The Barn Owl differs from true owls in several ways. A Barn Owl is a long-legged, slender owl with an elongated skull and heart-shaped face. It has long thin legs and long wings adapted for hunting grasslands, has small dark eyes, and relies almost entirely on hearing to capture its prey. Its syrinx is shaped differently causing it to scream rather than hoot. Barn Owls hunt open grassland habitat and prey almost entirely on voles and other rodents, whereas Barred Owls are found in



Barn Owl chick (*Tyto furcata*).

woodlands and eat a wide variety of items including snakes, crayfish, and frogs.

Like humans, Barn Owls are found worldwide. The only other bird species that share this characteristic are Osprey, Peregrine Falcons, and Cattle Egrets. There is a current belief that there are actually three different species of Barn Owls: The American Barn Owl, *Tyto furcata*, found in the Americas; the Common Barn Owl, *Tyto alba*, found in Europe and Africa; and the Western Barn Owl, *Tyto javanica*, found in India and the far east. A study is currently underway to prove this theory, and we are contributing Patuxent River Barn Owl morphology data to it.

Barn Owls exhibit reversed sexual dimorphism where females are 20% larger than males. Females are also a bit darker and have more breast spots. Outside of the breeding season, individuals are solitary, keeping to themselves. As day length grows, pairs reunite and begin their annual courtship rituals. Males will locate and defend the nest site from intruders. Males will often stay with a particular nest for the duration of their lives as



Nest box inspection revealing 5 chicks approximately 4-5 weeks old. Note the varying ages of the young.



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Jug Bay Wetlands Sanctuary is operated by the Anne Arundel County Department of Recreation and Parks. It was established in 1985 with the goals of wetlands research, environmental education, and protection. The Sanctuary is a limited-use park. Groups are requested to make a reservation by calling the office before planning a visit.

Jug Bay Wetlands Sanctuary is a component of the Maryland Chesapeake Bay National Estuarine Research Reserve, which along with 27 other Reserves around the country promotes scientific research, public education, resource management and stewardship in estuaries across the nation.

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Andrew Brown banding Barn Owl chicks at 7 weeks old as families whose properties host next boxes observe.

female partners come and go. It appears that within the first 2–3 years, females will mate with different males in different locations. By 4 years of age, she will settle down with a specific male and will generally stay with that male for the rest of her life.

Courtship begins with vocalizations, presentations of food by the male, and allopreening (preening each other). Eggs are laid every 3–4 days, and clutch size averages between 5 and 7 with records of 19. The female is the sole incubator. She begins incubation as soon as the first egg is laid. Therefore, the chicks hatch at different times. Asynchronous hatching is believed to ensure the survival of at least one or two chicks if food sources decline, so that the entire nest is not lost. Incubation lasts for 35 days, and chicks stay in the nest for a whopping 9 weeks before fledging. In Maryland, most eggs are laid in early April. On rare occasions, they can also have a fall nest in response to abundant food supplies. It is estimated that mortality can be as high

as 80% in their first year of life. Longevity records for wild Barn Owls are in the range of 15 years. We have one male still nesting in the Patuxent River population that was banded as a chick and is now 9 years old.

The population of Barn Owls has significantly declined in the eastern United States over the last several decades. In 1986, the National Audubon Society placed them on their “Blue List” of species of concern. In 1988, Scott Smith and Glen Theres of Maryland DNR published an article entitled, “Barn Owls are Marsh Birds Too,” and began a marsh nest box project in Dorchester County. Nest boxes are approximately 2 feet by 3 feet, providing 6 square feet of prime waterfront property. The following year, Prince Georges County began their Barn Owl nest box project. In 1991 Maryland officially placed them on their Watchlist, and in 1994 Calvert County started their nest box program. A comparison of nesting records between the first and second Breeding Bird Atlases from 1986 to 2006

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Dear Friends,

Dear Friends of Jug Bay,

Welcome to the winter 2021 issue of *Marsh Notes*. I would like to recognize Darcy Herman for putting together the amazing *Marsh Notes*.* In addition, I would like to thank the volunteers of the Friends of Jug Bay (FOJB) and the volunteers and staff of the Jug Bay Wetlands Sanctuary (JBWS). JBWS is an example of what can be done with local and distant support. Studies, education and stewardship conducted by our volunteers and JBWS staff help to preserve trends of species and their habitats. With your support and the hard work that your Board does, I would like to announce the state of the FOJB is strong. Each member makes a difference. A quick reminder that membership renewals are coming up.

I'm glad to report that the Visitors Center at JBWS remains open to the public. So close to Baltimore and Washington, DC. Come and enjoy the boardwalks along the marsh and the paths and canopy in the forest.

I would like to thank Anne Muecke for volunteering to lead our Fundraising Committee. If you have any interest in helping Anne, please contact her at a.muecke@friendsofjugbay.org.

Allison Burnett, the JBWS Office Manager, has been busy stocking the store. She is ordering new hoodies and embroidered beanies for the approaching cold weather and holiday gift giving. In addition she has created a JBWS photo calendar that is available both physically in the store and through purchase online at <https://www.createphotocalendars.com/Store/Jug+Bay+Wetlands+Sanctuary-6944426787>

We welcome new and returning FOJB members:

Donald Dichmann
Asher & Finnegan Gaddis
John Kapustka

Nicholas McGinty
Joanie Nicaise
Tim Williams

Do you have something to say or something on your mind? Let the Board know. I would like to invite everyone to attend our FOJB board meetings on the second Tuesday of every month. Please contact me for more information. Also, if you have any concerns or questions and don't want to come to a meeting, please feel free to contact me at tbjerkne@friendsofjugbay.org.

With the holidays approaching, I would like to wish all a very merry and happy holiday season!

Tor Bjerknes, *FOJB President*

*And Darcy would like to recognize the talents of Liz Fisher, designer of *Marsh Notes*.



Garden Projects Around Jug Bay

By Allison Burnett, *JBWS Office Manager and MD Master Naturalist*, and Debra Gage, *JBWS Volunteer and Program Coordinator*



Planting the plug at the entrance to Glendening Nature Preserve.

The Glendening Nature Preserve Entrance at Plummer Lane. You may have noticed the tarp covering the hillside along the Plummer Lane entrance at Glendening Nature Preserve. What was happening? With help from a Green Grant from BGE and the Friends of Jug Bay, we hired a local small business, EcoHaven LLC, to help us give the entrance a facelift. It took several visits from staff, professionals, and volunteers to get the job done over the course of a few months. First the site was weed whacked and some larger invasives were carefully painted with herbicide. Then we covered it in plastic over the summer so that the sun could steam the remaining vegetation, roots, and the seed bank, a process called soil solarization. Soil solarization has been effective in controlling weeds on organic farms. After 2 months of summer heat, we removed the plastic and dug out any remaining invasives. Then we started planting our native wildflowers and grasses! We planted 1,000 plugs at the site and covered the area with mulch to discourage weeds, but this area will likely need some more tender love and care throughout the spring and summer months to become a healthy established native plant garden. It is hard to believe the transformation! —Allison Burnett

Sanctuary Planter Box Makeover.

Volunteer Meghan Petenbrink (standing on right) became an Anne Arundel County Master Watershed Steward last year. Since then, she has been hard at work improving the Jug Bay gardens. Last year, for her capstone project, Meghan brought back to life our rain garden by the pavilion. This year, with a grant from Unity Gardens and help from staff and missionary volunteers, the parking lot planter box was weeded and replanted with native pollinator plants. We are excited to see the new plants come up in the spring and what pollinators they will attract. Thank you to our wonderful volunteers! —Debra Gage



Meghan Petenbrink leading a group of volunteers replanting the parking lot planter box at the Sanctuary Proper.

Pilot Sunflower Field Blossomed at Emory Waters Nature Preserve in July

By Liana Vitali, *JBWS Citizen Science & Stewardship Coordinator*

Among the images that conjure up summer sentiments, bright and cheerful sunflowers might top the list. Sunflowers are not only a pleasure to view in any green thumbs garden—their seeds are densely packed with nutrients supporting the health and full tummies of many local bird and small mammal species here at the Sanctuary. Using the Maryland Department of Natural Resources McKee-Beshers Wildlife Management Area sunflower fields model as inspiration, Jug Bay staff and volunteers



Jug Bay volunteers spent many summer mornings weeding the sunflower patch. Photo by Liana Vitali.

planted a trial quarter-acre field along the road into the Emory Waters Nature Preserve this past May. Seeds were purchased from Ernst Conservation Seed, and natural rainfall provided all the water needed to germinate and sustain the plants. The true labor of love came with weeding the field. Our volunteers donated hundreds of hours of their time in June and July for weeding and general maintenance of the trial plot. The results were hundreds of enormous sunflower heads that not only dropped thousands of seeds for wildlife foraging but also produced large quantities of pollen for many different species of bees that frequented the field when in bloom. Much was learned from this first year of the sunflower meadow and, with new ideas and improvements in hand, the staff looks forward to creating and even expanding the sunflower fields at Emory Waters Nature Preserve for years to come.

Jug Bay Bioblitzes: Ten Years Ago to Today

By Laura Exar, *Chesapeake Conservation Corps Member, JBWS*



BioBlitz searchers inspect plants along the Marsh Boardwalk in 2009. Photo from “Summary Report of the 2009 Jug Bay Bioblitz.”

BioBlitzes are short periods of biological surveying that aim to identify all of the species in a designated area to provide a snapshot of its biodiversity. Jug Bay Wetlands Sanctuary has conducted three BioBlitzes in the past: the first in September 2007, another in June 2009, and most recently, a Stream Blitz in June 2011. The purpose of these BioBlitzes was to find, identify, and record as many species as possible during a 24-hour period.

The BioBlitzes focused on a number of species groups, including plants, mushrooms, plankton, fish, reptiles and amphibians, birds,

and mammals. In 2007 and 2009, 501 and 334 total species were observed, respectively. The Stream Blitz in 2011, which focused on three streams (Galloway Creek, Two Run Branch, and Pindell Branch) over a 15-hour period, recorded 128 total species. Now, 10 years later, a fourth Jug Bay Wetlands Sanctuary BioBlitz is being planned for next year—the first one ever occurring at Emory Waters Nature Preserve!

The BioBlitz of Emory Waters Nature Preserve will take place from 12:00 pm on June 25th to 12:00 pm June 26th, 2022. As

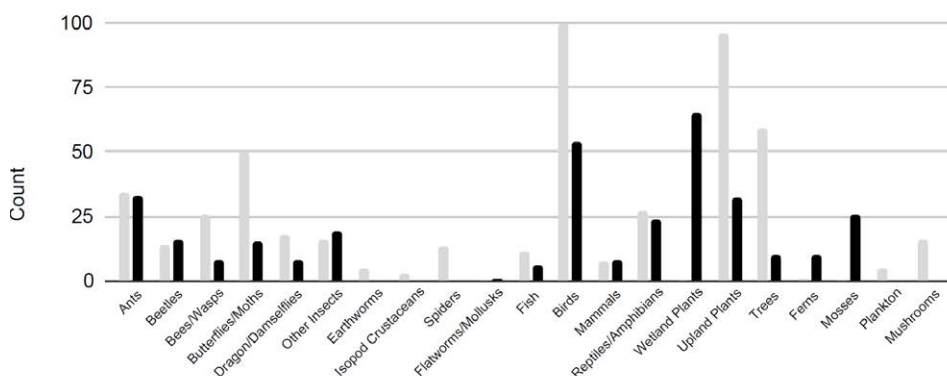
with the previous BioBlitzes, an organizational matrix will be created with 3-hour slots for each search team during the 24-hour study period. Local experts will lead search teams of volunteers to collect BioBlitz data using the popular crowd-sourced species identification app iNaturalist. Following the conclusion of the BioBlitz, further identification may be needed to more accurately identify certain species. A white paper report of the BioBlitz findings will be written to showcase the study’s findings.

Emory Waters Nature Preserve is the ideal location for this BioBlitz for a number of reasons. Because there has never been a BioBlitz at Emory Waters, this study will serve as an excellent way to create a baseline of species diversity and richness. The baseline data can be used to determine the impact of land use changes in Emory Waters Nature Preserve’s biodiversity resulting from the conversion of agricultural land to forest and meadows and the construction of the Jug Bay Education, Research, and Discovery Field Station. Additionally, the recruitment of volunteers to collect data for this BioBlitz will increase community involvement, engage participants in citizen science, and raise awareness about the importance of biodiversity.

BioBlitz Species Observed

2007 vs. 2009

■ 2007 ■ 2009



Comparison of species observed during the 2007 and 2009 BioBlitzes.

Jug Bay Wetlands Sanctuary Open Hours

Sanctuary Wetlands Center: Wednesdays, Fridays, Saturdays, and (Mar-Nov) Sundays 9:00 am - 5:00 pm

Glendening Nature Preserve: Wrighton Road entrance daily, gate open 9:00 am - 5:00 pm; Plummer House entrance Monday to Saturday, gate open 9:00 am - 5:00 pm (trails, Butterfly Garden, dogs on leash)

Patuxent Wetland Park: daily, dawn to dusk (fishing, hand-carried boat launch)

Wootons Landing Wetland Park: daily, dawn to dusk (fishing, loop trail, hand-carried boat launch)

Sanctuary Wetlands Center admission fee: \$6/vehicle

- Free for current Friends of Jug Bay members, active volunteers, and active military and their immediate families.

- There are no fees to visit our other sites.

Visit www.jugbay.org for directions, information and updates to our schedule.

Registration is required for all programs. Please call 410-222-8006 or e-mail programs@jugbay.org to register, or, in the case of ActiveNet programs, register online at <https://apm.activecommunities.com/aarecparks>.

All programs meet at the Wetlands Center at 1361 Wrighton Road unless otherwise noted. An adult must accompany children under 13.

**Visit www.jugbay.org
and follow links to
public programs
offered at JBWS.**

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showed a 57% decline in MD and a 54% decline in the Patuxent River Corridor. Moving forward to 2016, Maryland declared the Barn Owl as a Species of Greatest Conservation Need as part of their state Wildlife Action Plan. Three areas in Maryland have been identified as the last

“The goal of the Patuxent River Barn Owl Project is to gain a better understanding of the ecology of Barn Owls living in the Patuxent River corridor.”

remaining breeding populations. These include the Patuxent River Valley’ agricultural areas in upper Montgomery, Frederick and Carroll Counties; and the Delmarva. Nesting in other areas of the state is sporadic at best.

The Patuxent River Valley still holds



Andrew Brown inspecting a nest box for chicks using a GoPro camera at the end of a telescoping painter's pole to minimize disturbance to the nest.



Replacement of an old nest box with a new one. Barn Owls moved in shortly thereafter.

many historic riverfront farms that date to the original land grants from Lord Calvert in the 1600s. These historic properties have remained relatively unaltered by development. Additionally, they provide Barn Owls access to marshes along the Patuxent where they can supplement their vole diet with Marsh Rice Rats. From 1988 through 2006, Prince Georges County maintained 25 boxes and produced more than 200 chicks. Calvert County managed 19 boxes and fledged 26. Anne Arundel County had 2 boxes that weren't monitored so it is unclear what the production was over that time period. A breeding collapse occurred following the severe winter of 2006, and most of the nest boxes lay abandoned until 2012. Since then, we have seen a resurgence in breeding numbers. Prince Georges County now manages 6 nest boxes, and to date has produced approximately 150 chicks. Calvert manages 57 nest boxes and has produced 82 young. We are now monitoring boxes in Anne Arundel County, and since 2019 they have



Inspection of a Barn Owl nest box.



Team working carefully together to raise a new nest box.

produced 16 chicks. All chicks are banded so that we can track their movements.

In 2019 a team of Barn Owl researchers and local landowners formed the Patuxent River Barn Owl Project. The advisory group consists of members from Prince Georges, Calvert, and Anne Arundel Counties, as well as Maryland DNR and Maryland Bird Conservation Partnership.

The goal for the Patuxent River Barn Owl Project is to gain a better understanding

Moment in Nature



Black-and-Gold Flat Millipede (*Apheloria virginiesis*) fluorescing in UV light.

Centipede Encounter

By Allison Burnett, JBWS Office Manager & MD Master Naturalist

The Black-and-Gold Flat Millipede (*Apheloria virginiesis*) is one of the few arthropods native to Maryland that fluoresces under ultraviolet light. During a quest to find bioluminescent mushrooms after hours at the Sanctuary, and armed with UV flashlights, we found one such millipede! The intensity of the fluorescence had us spellbound. Later we discovered that this particular millipede belongs to the family Xystodesmidae, which also contains the only genus of millipedes known to exist that are bioluminescent (don't need a UV flashlight to see them glow)! There are a little over 300 species of Xystodesmidae millipedes and they are often referred to as "flat-backed millipedes" since most other families of millipedes have rounded body segments. Nature is amazing!

of the ecology of Barn Owls living in the Patuxent River corridor. Information gathered on spatial distribution and population demographics include reproductive and mortality rates, habitat use and range, population age and sex structure, longevity, genealogy, natal dispersal, and seasonal movements.

This information is derived from monitoring nest boxes, banding all possible individuals in the population, and conducting radio telemetry to track movements. Additionally, morphometric analysis of adult owls in the population will contribute to a world-wide taxonomic review of Barn Owls with the purpose of redefining species. The data collected by

this project will increase the profile of the Patuxent River Corridor as an important resource, where continued conservation action will affect Barn Owl survivorship and other wildlife.

While Barn Owls are considered by many to be one of North America's most beautiful birds, they are much more than just a pretty face. They are sensitive, secretive animals and are easily disturbed by people. They inhabit those remote areas in our landscape that are rarely invaded by humans. It is our duty to ensure that these birds, as well as those remote places, remain truly wild. If we lose them, we are losing so much more than just a pretty owl.



Bee Balm (*Monarda didyma*), one of the native seeds gathered by JBWS volunteers.

Gallant Gatherers

By Allison Burnett, JBWS Office Manager
and MD Master Naturalist

In October we asked for our intrepid visitors and volunteers to help us gather native seeds for a future meadow project. What a great response we received! People were carting in bags of all sizes, chock full of beautiful seeds. We now have a wonderful start for our meadow project! Using collected seeds from nearby areas increases the success rate for germination and survivability of the young plants. All the seeds provided are perfectly acclimated to live in our climate and soils. We will be planting soon and look forward to updating you on how our meadow is progressing. Hopefully you will be able to come by and see for yourselves. Thank you kindly for your assistance!



Some of the native seeds collected and donated by volunteers and visitors.

Explore our volunteer opportunities online at www.jugbay.org/volunteer. For more information, call 410-222-8006 or e-mail Volunteer & Program Coordinator Debra Gage at rpgage00@aacounty.org

Jug Bay Field Station (JBERD) Update

By Patricia Delgado, JBWS
Superintendent

The Sanctuary staff are happy to let you know that the Master Plan for the Field Station has been completed! This plan will soon be shared via a public meeting and all of you will be invited to participate. Overall, the construction ground will include the main field station building, cabins, a bath-house, a pavilion, campground space, a small meadow, a series of pathways communicating the different areas, and parking. And, to give it a natural touch, all of these features will eventually be surrounded by trees and gardens. The next step consists of the Design Phase, during which the architects will draw details of the buildings themselves, their look, size, space distribution and use, etc.

Regarding the grounds around the Field Station, the reforestation and meadow creation project has also started! A winter cover crop has been laid down, and the planting of trees will start soon after Thanksgiving. We have much to look forward to in 2022!



Field at Emory Waters Nature Preserve soon to be planted with trees and a new pollinator meadow. Photo by Patricia Delgado.



Halloween Critter Crawl

On Saturday October 30th, 193 participants and 15 volunteers joined Jug Bay staff for our third Annual Halloween event. The Halloween Critter Crawl included lantern-lined trails, insect and other animal displays, campfires, s'mores, hay rides, nature crafts, hot dogs, and hot chocolate. Many families joined and most wore their favorite costumes. Everyone enjoyed sitting around the campfires, making s'mores, and listening to two volunteers playing the guitar. Everyone had a fun evening!

Jug Bay is one of the three components in the Chesapeake Bay National Estuarine Research Reserve, Maryland. The purpose of CB-NERR is to manage protected estuarine areas as natural field laboratories and to develop a coordinated program of research and education as part of a national program administered by National Oceanic and Atmospheric Administration (NOAA).

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Check out the
CBNERR-MD web page at
[www.http://dnr.maryland.gov/waters/cbnerr](http://dnr.maryland.gov/waters/cbnerr)

SAV Watchers Saving the SAVs!

By Rebecca Swerida, *Reserve Biologist, CBNERR-MD*



Vallisneria americana, a species of submerged aquatic vegetation surveyed by SAV Watchers.

Submerged aquatic vegetation (SAV) is the bushy, green, leafy, secret super hero of the Chesapeake Bay! These vascular plants have evolved their way from land to sea, living in the shallows of creeks, bays and oceans the world over. They provide vital habitat for fish, invertebrates, and all sorts of critters. They serve as invaluable nursery grounds for juvenile fish, crabs and more to hide in, safe from predators. The hidden nooks and crannies of SAV beds even protect adult crabs when they're soft and vulnerable after shedding their shells to grow larger (as any seasoned soft shell crabber could tell you). Predators of those smaller creatures, including the adorable otters of our Reserve components, love SAV beds as well, as rich hunting grounds. Beyond supporting the whole estuarine food web, SAV even benefits humans and the Bay itself by helping to filter out suspended sediments clouding the water column, absorb excess nutrients, sequester carbon, and even increase waterfront property values by creating crystal clear beautiful waters.

But (of course there's a but)—SAV coverage and health has declined in the Chesapeake Bay for decades. Low water quality reduces the light available to these underwater plants, and increased development and use of shallow water areas has physically disturbed the habitat. Best management practices used to reduce stormwater runoff and the sediments and nutrients carried with it into the bay have contributed to short-term rebounds in SAV coverage and density over recent years. Now we're seeing that although these efforts were clearly effective, they are not enough when climate change impacts increase the stressors on SAV. It's more important than ever for scientists to have a clear understanding of where SAV grows in the bay, what species are there, and how healthy it is. Although professional scientists thoroughly study very small areas of SAV and aerial imagery gives us a broad but non-detailed view of where it's growing, there is a gap in information that is available.

This is where you can become part of this incredible story! Community scientists are stepping up all over the Chesapeake to fill in this information gap through the

Chesapeake Bay SAV Watchers program. Staff and volunteers at both the Jug Bay and Otter Point Creek components of the Chesapeake Bay National Estuarine Research Reserve are ready to train up new Watcher volunteers. The project kicked off in July with an enthusiastic group of approximately 15 volunteers participating in our first ever SAV Watch-a-thon Extravaganza. The coordinated monitoring event resulted in a detailed map of SAV species and conditions across the Otter Point Creek estuary. Next year we hope to organize three Watch-a-thon events around May, July, and September to capture seasonal changes in the SAV. Volunteers are also encouraged to collect data at their own pace. Equipment kits are available at the front desk to sign out whenever a trained volunteer wants to go for a paddle where there might be some SAV. The more the merrier when it comes to data! We're all looking forward to expanding this fun community science program and using the data to improve our understanding and management of some really amazing and valuable green, leafy ecosystems.



SAV Watchers volunteers at work.

CBNERR-MD Receives Gold Star Award from Maryland Coastal Bays Program

By Jennifer Raulin, *Reserve Manager, CBNERR-MD*

The Chesapeake Bay National Estuarine Research Reserve received a Gold Star award from the Maryland Coastal Bays Program (MCBP). This award recognizes the extraordinary work by MCBP partners in helping to maintain the environmental integrity of the Coastal Bays watershed. Specifically the Reserve was recognized for work in providing expertise and assistance installing surface elevation tables to monitor wetland elevation change in the northern portion of the Coastal Bays. This knowledge has enabled the Coastal Bays Program to expand their tidal marsh monitoring and make their overall program more robust. Kyle Derby, the Research Coordinator for the Reserve, was the lead on initiative, and it was his experience and expertise that made this collaboration possible.



Kyle Derby, CBNERR-MD Research Coordinator, holds CBNERR-MD's Gold Star award from the Maryland Coastal Bays Program.

W I N T E R

2021-22



DEPARTMENT OF RECREATION AND PARKS

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SAVE THE DATE



First Day Hike

JANUARY 01, 2022
9 AM - 12:00 PM

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